Towards entomophagy in Belgium: development of accessible snacks by incorporation of unrecognizably processed insects

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The consumption of edible insects or entomophagy is globally promoted as one of the measures to ensure sustainability in food production [2]. However, despite the excellent nutritional properties of insects, the barrier to consume them is high in the Western world. One way to overcome this barrier is to incorporate insects in an unrecognizable way in food.

Researchers of Lab4Food [1, 3] selected three snacks and a variant of each was prepared by including insects. The insects used were freeze dried grasshoppers (*Locusta migratoria*) and fresh mealworms (*Tenebrio molitor*). These insects were grinded or chopped and added to the snack or an ingredient was replaced by the insects. The snacks were used in a hedonic sensory test and included a raspberry-mousse almond cake with or without processed grasshoppers, a pesto wrap containing a traditional pesto or a pesto in which the pine nuts were replaced by mealworms and a mini pizza containing minced meat or chopped mealworms. Participants of the sensory test knew in advance that insects were processed in some snacks and had to compare the original products with the snacks containing the insects. Parameters included were appearance, flavor, mouthfeel and texture.

The study consisted of three parts. A questionnaire was given before (part I) and after (part III) the sensory analysis (part II). Part I of the study showed that the majority of the participants (62%) had never eaten insects (knowingly) before. When asking why the participants would eat insects, 38% answered "ecological aspects", 37% "health reasons", 9% "cost", while 9% of participants reported "curiosity" as a reason to eat insects. After the sensory analysis (part III) important arguments for entomophagy still remained ecological and health reasons, however 18% of the participants also wanted to eat insects because of the taste.

When looking at the sensory analysis (part II), the various insect snacks were rated as tasteful. Moreover, the participants hardly noticed the difference between the snacks with or without insects.

These results indicate that the inclusion of insects is accepted by western consumers when they are unrecognizably processed into ready-made snacks, and when the appearance, flavor, mouthfeel and texture of the snacks are experienced as "normal".

1 Boeckx, H, Peeters, K, Van Der Borght, M (2012) Insectensnacks, gezond en lekker … of toch niet? Tijdschrift voor Voeding en Diëtetiek, 38 (6), p. 18-22.
2 FAO (2013), Edible Insects: future prospects for food and feed security, Food and Agriculture Organization of the United Nations, Rome, 2013.
3 Van Gorp, N (2012), Insecten als humane voeding - productontwikkeling, unpublished thesis, Thomas More Kempen, Life Sciences Geel, Nutrition and Dietetics.

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